### Accepted Manuscript

Title: Assessment of the Impact of Information Feedback of Prepaid Meter on Energy Consumption of City Residential Buildings using Bottom-Up Load Modelling Approach

Author: T.R. Ayodele A.S.O. Ogunjuyigbe I.A. Atiba

PII: S2210-6707(16)30536-4

DOI: http://dx.doi.org/doi:10.1016/j.scs.2017.01.015

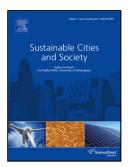
Reference: SCS 574

To appear in:

Received date: 24-10-2016 Revised date: 30-12-2016 Accepted date: 27-1-2017

Please cite this article as: Ayodele, T. R., Assessment of the Impact of Information Feedback of Prepaid Meter on Energy Consumption of City Residential Buildings using Bottom-Up Load Modelling Approach, *Sustainable Cities and Society* (2017), http://dx.doi.org/10.1016/j.scs.2017.01.015

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



### ACCEPTED MANUSCRIPT

#### **HIGHLIGHTS**

- Impact of information feedback of prepaid meter on energy consumption is evaluated
- Bottom-up modeling approach is adopted for the study
- Weighted load constraint multiplier is used to limit energy consumption of loads
- This enhances total savings of 8.8% for weekdays and 8.8% for the weekends

# Assessment of the Impact of Information Feedback of Prepaid Meter on Energy Consumption of City Residential Buildings using Bottom-Up Load Modelling Approach

. Ayodele T.R, Ogunjuyigbe A.S.O and Atiba I.A

<sup>1</sup>Power, Energy, Machine & Drive Research Group, Electrical and Electronic Engineering Department, Faculty of Technology, University of Ibadan, Ibadan, Nigeria

aogunjuyigbe@ui.edu.ng, tr.ayodele@ui.edu.ng, atibaibrahim@yahoo.co.uk

\*Corresponding author: Ayodele T.R, Email: <a href="mailto:tayodele2001@yahoo.com">tayodele@ui.edu.ng</a>, Phone no: +2348064339270

#### **Abstract**

This paper evaluates the impact of information feedback of prepaid meter as a Demand side Management (DSM) tool in reducing the energy consumption of residential buildings in the city of Ibadan, Nigeria. The bottom-up modeling approach which has the capability to determining the total energy consumption without historical data of energy use is adopted for the study. First, active residential occupancy pattern of different individual household population classes are obtained from literature, then the individual electrical appliances are aggregated in such a way that reflects the income pattern of the households to form single individual household load profiles. The load profiles of the various individual households are aggregated to determine the overall residential load profile of the entire city. The city of Ibadan, southwestern Nigeria is used as the study area. Information feedback from the prepaid meter ismodeled by setting priorities to groups of appliances as they affects the quality of life of the end user. The rate of energy consumption of the loads is limited using weighted load constraint multipliers. Some of the key results of a the study show that information feedback from

# دريافت فورى ب متن كامل مقاله

## ISIArticles مرجع مقالات تخصصی ایران

- ✔ امكان دانلود نسخه تمام متن مقالات انگليسي
  - ✓ امكان دانلود نسخه ترجمه شده مقالات
    - ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
  - ✓ امكان دانلود رايگان ۲ صفحه اول هر مقاله
  - ✔ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
    - ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات